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***In Vitro* Bio-Accessibility Of Selenium Supplementation On Antioxidative Activity Of *Volvariella Volvacea***

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Selenium is one of the essential mineral nutrients, required by human body as involved in antioxidant and defense reactions. In this context, the present study focused on evaluation of the effect of Se supplementation on two strains of *V. volvacea* (VV3 and VV6), under *in vitro*. *In vitro* studies revealed that Selenium (Se) supplementation of 10 and 15ppm maximally enhanced the radial growth rate of VV3 and VV6 respectively, among all the treatments including control. Mycelial proliferation in liquid medium was recorded highest in case of 15 (12.09±0.42 g/l) and 10 ppm (12.30±0.60 g/l) in case of VV3 and VV6. Scanning Electron Microscopic observations for the effect of Se on hyphal growth disclosed sparse, non-uniform damaged hyphae with increasing concentration of Se at 20 ppm, compared to regular, dense healthy hyphae in control in both the strains. The positive influence of Se biofortification was also observed on antioxidative activity of *V. volvacea* under *in vitro* in terms of protein content, total phenols, flavonoids, Peroxidase (PO) and free radical scavenging activity. The antioxidants were found to increase with the increase in Se supplementation, however when the concentration exceeded 15ppm, the levels were reduced due to toxic effects of Se under axenic conditions. Biosorption studies for Se using ICPMS revealed highest Se in 20ppm supplementation i.e., 576.01±12.98 µg/gdw and 623.27±10.74 µg/gdw in VV3 and VV6. The functional group diversity analysis using Fourier Transform Infra-red Spectroscopy (FT-IR) confirmed changes in structural and conformational changes in biomolecules in Se enriched mycelia. The present study concluded that Selenium improved the antioxidative property of *V. volvacea* compared to control.